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SYLLABLE STRUCTURE AND ASPECT MORPHOLOGY IN ISTHMUS ZAPOTEC*

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1 Introduction

In this article we discuss the basic features of Isthmus Zapotec (IZ) syllable structure. Although previous work (Pickett 1967) has done this in some detail already, the present work differs from the previous analysis. First, the constituent "rhyme" is used and found useful, but "nucleus" and "syllable-final margin" are not. Second, glides are analyzed as forming part of the rhyme in some instances, whether they precede or follow the vowel. Third, glottal stop is analyzed here as a laryngeal feature of the vowel rather than as a consonant restricted to syllable-final position. Fourth, in the present analysis only glides occur after a vowel in a given syllable (except in loanwords). We then discuss the morphophonemics of aspect prefixes (and certain others) in IZ with this syllable structure in mind and present a motivated alternative to the previous nongenerative analysis (Pickett 1953, 1955). We believe this presentation also has definite advantages over previous linear generative treatments of this area in Zapotec (Speck 1984).

2 Syllable Structure

Isthmus Zapotec has the following phonemes in common native words. (We basically ignore here certain rare exceptions and also loanwords.)

Consonantal							Nonconsonantal			
Obstruents					Sonorants		Syllabic		Nonsyllabic	
p	t	č	k	fortis		nn	i	u	y	w
b	d	ǰ	g	lenis	m	n	e	o		
	s	š		fortis		ll		a		
	z	ž		lenis		l				
						r				

Vowels may occur with one of two laryngeal modifications: checked, as in **gye?** 'flower'; or laryngealized, as in **zee** 'fresh corn'. We do not discuss the prosodic representation of these vowels below. It should be pointed out that laryngealized vowels occur only in stressed syllables.[1] This fact should perhaps be tied with the restriction stated below on branching rhymes (branching rhymes occur only in stressed syllables).

These sounds are grouped into syllables in very limited ways. Along the lines of Harris 1983, we propose the rules discussed in the following sections.

2.1 Onsets

Every syllable has an onset, with some word-initial exceptions. Many, but not all of these exceptions are due to the loss (historically or synchronically, in some cases) of initial /g/ (discussed below). The onset may be any of the consonants listed above, including the glides. Ignoring the exceptions, we formulate the first onset rule as follows.

> Onset rule 1: Construct a tree of category O(nset) whose obligatory branch dominates a [-syllabic] segment.

There is a minor restriction on onsets. While fortis sonorants (phonetically long) may be onsets word-medially, they may not be word-initially: **čonnǎ** 'three', **belle** 'flame'.

An /s/, /š/, or nasal may be adjoined to the left of a consonantal segment. Monomorphemic words with the sibilants are rare: these are commonly found, however, on possessed forms of nouns. Superficially the /š/ typically reduces to a voiceless version of the following sonorant: /š-luuna-be/ (POSS-bed-3human) --> [Lluunabe] 'his/her bed'. If the

sibilant is adjoined to a lenis (voiced) obstruent, the obstruent devoices: /ʂ-bi?ku/ (POSS-dog) --> [ʂpi?ku]. Since we will refer to this devoicing rule later, we formulate it here.[2]

Devoicing: [-sonorant] --> [-voiced] / [-voiced] ___

As we stated above, many words in the speech of a large number of people do not occur phonetically with an initial consonant. Dialectally these typically alternate with /g/ initial forms.

u'naa ~ gu'naa 'woman'

Nevertheless, it can be shown that the loss of /g/ is a synchronic, although not completely understood, process. The possessed form of most such vowel-initial words reveals the underlying /g/.

ʂ-ku'naa < /ʂ + gu'naa/

The word **iza** 'year' never has an initial /g/, and in fact can be shown to be a real vowel-initial word underlyingly by examining its possessed form.

ʂ-iza < /ʂ + iza/

The g-Deletion rule may therefore be stated as follows (although it is not completely predictable as to the forms to which it will apply): a /g/ is optionally deleted word-initially before an unstressed vowel.

g-Deletion: g --> Ø / # ___ V
(optional) [-stress]

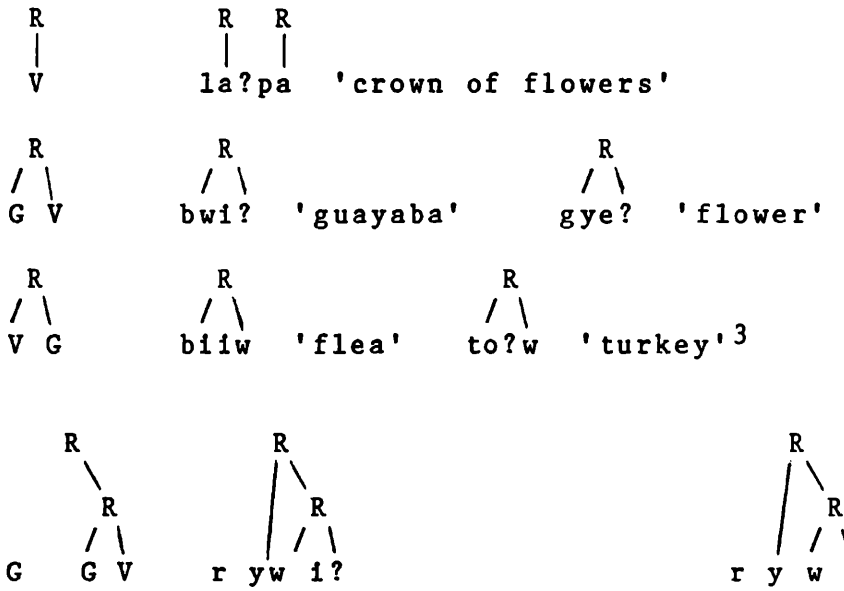
A nasal may occur only contiguous to a stop (in the onset) and is homorganic with it. Other restrictions may be stated, but we are not concerned with these here. We simply state the second onset rule as follows:

Onset rule 2: Adjoin /ʂ/, /s/, or a nasal to the left of a consonantal segment.

Examples: ʂneza 'correct'
sti 'other'
ndɪ̈? 'this'
[ŋ]gä 'that'
mbʊ̈otä 'very big'
ʂu[ŋ]ku 'youngest child'

2.2 Rhymes

Rhymes (R) of the following types occur (V = vowel, G = glide).



A branching rhyme containing two glides does not occur word-initially.

These rhymes can be described by the following rules:

Rhyme rule 1: Construct a maximally binary branching tree of category R(hyme) whose obligatory branch dominates [+syllabic, -consonantal] and whose optional branch dominates [-syllabic, -consonantal].

Rhyme rule 2: Adjoin a [-syllabic, -consonantal] segment to the left of a rhyme beginning with a [-syllabic] segment.

Branching onsets and branching rhymes may cooccur, as the examples **stwi** 'sickness from embarrassment' and **ngiiw** 'man' show.

Counting laryngealized vowels as one, the syllable may have no more than four segments. No syllables of the type ***stwya*** exist. Branching rhymes generally occur only in stressed syllables. This simple statement can be made if syllables are constructed according to the principles given

above. Thus in the word **wa'ra** 'sick' the /w/ is in the onset; such a syllable may occur unstressed. In the word **kwe?** 'next to' the /w/ is in the rhyme; such a syllable can occur only when stressed. One possible exception is the sequence /nyV/ which may occur following the stressed syllable, but not before it: **ri'zinye** 'pester' (hab.), **ru'čiinya** 'bother' (hab.). Branching onsets, on the other hand, may occur in unstressed syllables: **randa** 'be able' (hab.), **škesa'do** 'fontanel'.[4]

2.3 Sequence constraint

Adjacent segments cannot have identical feature specification in IZ. Thus the following sequences, whether tautosyllabic or heterosyllabic, are not possible.

*iy *yi *uw *wu

Likewise there are no clusters of geminate consonants.

3 Aspect morphology

Unlike Texmelucan Zapotec (TZ) (Speck 1984), which has only four aspectual categories, IZ verbs regularly have seven--eight if the stative aspect /na-/ is counted. In certain ways the aspect morphologies of IZ and TZ are similar both with each other and also with other Zapotec languages and these similarities can be seen in the rules which are developed below for IZ. In other ways IZ is very different. Under certain conditions in TZ (Speck 1984:142) two aspect markers may occur on a single verb. A verb may also carry a negative prefix. IZ does not share these properties with TZ. More important, however, is the fact that the syllable structures of the two languages are quite different.

We discuss the allomorphy of aspect prefixes by groups of verbs. Verbs are cited in the forms they would have with a third person singular subject.

3.1 Vowel-initial roots

Of the five vowels of IZ, only two are commonly found root-initially: /a/ and /u/. Roots beginning with the other vowels are virtually nonexistent. In the following paradigms are included the only possible examples of /e/- and /o/-initial roots. The only /o/-initial root has an allomorph (which is probably the underlying form) with an initial /d/. This /d/-initial allomorph shows up in the completive aspect and elsewhere.[5] The two possible /e/-

initial roots also have stem allomorphs (see note 5). The vowel /i/ does not occur root-initially at all.

HABITUAL	POTENTIAL	FUTURE	PROGRESS.	PERFECTIVE	UNREAL	COMPLETIVE	
r-aku	g-aku	z-aku	kay-aku	way-aku	ny-aku	gu-ku	'dress oneself'
r-aana	g-aana	z-aana	kay-aana	way-aana	ny-aana	guu-na	'clean (field)'
r-a?de	g-a?de	z-a?de	kay-a?de	way-a?de	ny-a?de	gu?-de	'receive gift'
r-e?	g-e?	z-e?	kay-e?	way-e?	ny-e?	gw-e?	'drink'
r-eedɛ̈	g-eedɛ̈	z-eedɛ̈	kay-eedɛ̈	way-eedɛ̈	ny-eedɛ̈	b-eedɛ̈	'come'
r-o	g-o	z-o	kay-o	way-o	ny-o	gu-do	'eat'
r-una	g-una	z-una	kay-una	way-una	ny-una	b-ina	'obey'
r-uuna	g-uuna	z-uuna	kay-uuna	way-uuna	ny-uuna	b-iina	'cry'

We assume the following underlying forms for the aspect prefixes. Some choices of underlying forms are justified when consonant-initial roots are discussed.

r- k- z- ka- wa- ni- gb-

The following rules are needed to account for the allomorphs which occur with vowel-initial stems.

Voicing. Although it is not apparent at this point that /k-/ is the underlying form for the potential prefix, just as it is in TZ, the voiceless feature of this prefix is crucial with certain consonant-initial roots discussed below. We derive the voiced (lenis) variant by the following rule:

Voicing: k --> g / ___ + [+sonorant]

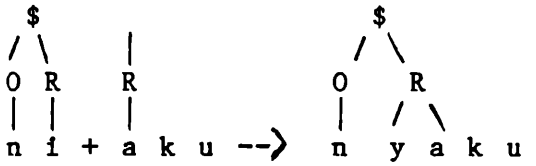
The causative prefix /k-/ undergoes the same rule.

ka + k + aǰe --> kagaǰe 'make wet' (prog.)

Gliding. A nonlow vowel becomes nonsyllabic before a vowel. Since only one syllabic position is possible in a rhyme and syllables without onsets are generally not allowed in IZ, this rule creates a segment which can be incorporated into the syllable structure. (The symbol $ signifies "syllable.")

$$\text{Gliding:} \quad \begin{bmatrix} +\text{syl} \\ -\text{low} \end{bmatrix} \rightarrow \begin{bmatrix} -\text{syl} \\ +\text{high} \end{bmatrix} \; / \; \_\_\_ \; [+\text{syl}]$$

Example:



Root vowels glide before the first person bound pronoun, as in the following examples:

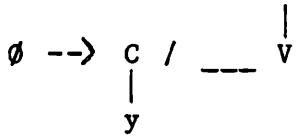
/r+aku+å/ --> rakwá 'I dress myself' (hab.)

/r+u+too+å/ --> rutwaá 'I sell' (hab.)

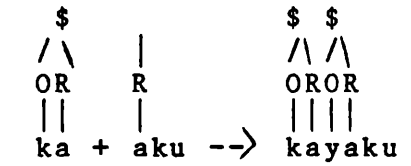
/r+u+dii+å/ --> rudyaá 'I give' (hab.)

y-Insertion. A /y/ is inserted before other vowels which have not been incorporated into a syllable (nonincorporated vowels are indicated in a rule by a straight line above the vowel). This process is bled by Gliding, which applies to a more restrictive context.

y-Insertion:

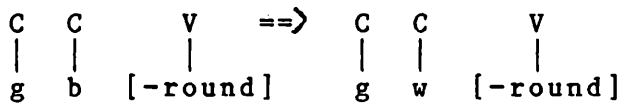


Example:

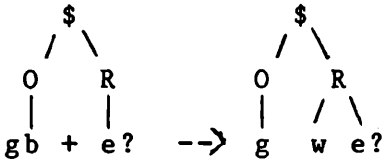


Lenition. /b/ lenites to /w/ following a consonant when a nonround vowel follows, thus allowing both consonants to be incorporated into the syllable onset. (Recall that /wu/ is not a permitted sequence.)

Lenition:



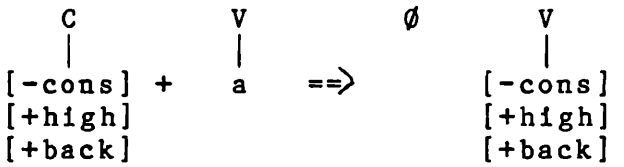
Example:



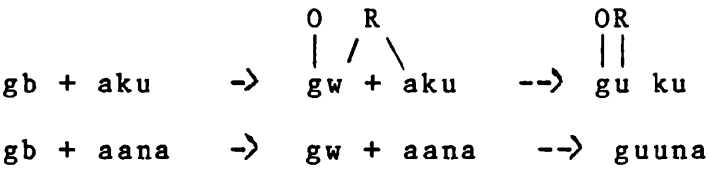
This rule is also used in the causative form of certain b-initial roots such as /-bezä/ 'wait'. (Causative morphology is much more irregular and unpredictable in IZ than in TZ, and we do not discuss it in detail here.) Thus /r-u-k-bezä/ becomes **rukwezä**.

Coalescence. A rhyme containing /w/ and /a/ of different morphemes reduces to /u/. The laryngeal feature of the original /a/ is retained. The sequence /wa/ does not coalesce in the prefix /wa-/ since both segments are in the same morpheme. Likewise, the sequence /wa/ internal to a root does not coalesce. This process is fed by Lenition.

Coalescence:



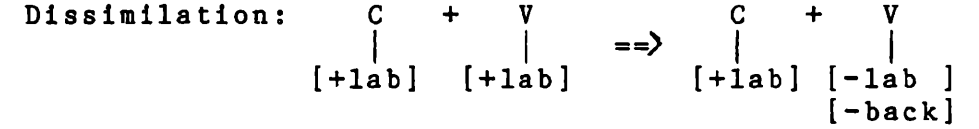
Examples:



The derivation of the form **gudo** 'eat' (compl.) is unexplained at this point. We return to it later. The /d/ is an irregularity that is associated with this root in the completive (an old feature found throughout Zapotecan) (see note 4).

Dissimilation. A morpheme-initial /u/ changes to /i/ following a /b/. Then other changes occur which are discussed immediately below.

Dissimilation:



Examples: gb + una --> gb + ina (--> b + ina)

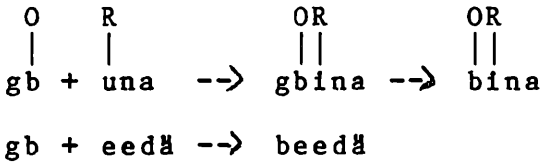
gb + uuna --> gb + iina (--> b + iina)

The Erasure Convention. Harris 1983 motivates the following convention in Spanish:

Erasure Convention: Segments not incorporated into syllable structure at the end of a derivationare erased.

We use this convention to account for the loss of the /g/ of the prefix /gb/ in those cases where /b/ does not lenite. (We also use it to describe other allomorphy below.)

Examples:



The root /-eedä/ must be marked as [-Lenition], preventing the surface form *gweedä and forcing the loss of the /g/.

3.2 Regular consonant-initial roots

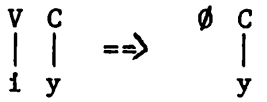
A wide variety of consonants are found at the beginning of roots. In this section we discuss what is in our analysis the "regular" set of consonant-initial verbs.

r-yaka	g-yaka	z-yaka	ka-yaka	wa-yaka	n-yaka	b-yaka	'enjoy'
r-yuu	g-yuu	z-yuu	ka-yuu	wa-yuu	n-yuu	b-yuu	'enter'
ri-wiini	gi-wiini	za-wiini	ka-wiini	wa-wiini	ni-wiini	bi-wiini	'become little'
ri-kabɨ	gi-kabɨ	za-kabɨ	ka-kabɨ	wa-kabɨ	ni-kabɨ	bi-kabɨ	'answer'
ri-dubi	gi-dubi	za-dubi	ka-dubi	wa-dubi	ni-dubi	bi-dubi	'be worn out'
ri-lä	gi-lä	za-lä	ka-lä	wa-lä	ni-lä	bi-lä	'push'
ri-niti	gi-niti	za-niti	ka-niti	wa-niti	ni-niti	bi-niti	'be lost'
ri-ree	gi-ree	za-ree	ka-ree	wa-ree	ni-ree	bi-ree	'leave'

Stems beginning with /y/ act a bit differently from other roots and so we treat them first here. In addition to the /y/-initial roots illustrated above, there are forms such as /-y-uutu/ which we take as the passive form of /-uutu/ 'grind'. These verbs, whether analyzed as (lexically restricted) passives or not, act just like /y/ initial roots.[6]

i-Deletion. As we noted in Sect. 2.3 the sequence /iy/ is not permissible. When the prefix /ni-/ occurs before /y/ roots, the /i/ deletes.

i-Deletion:



Example: ni + yaka --> n + yaka

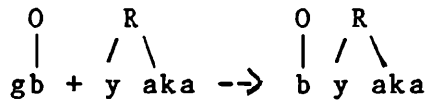
This rule also deletes the /i/ of the causative prefix /si-/.

ka + si + ya --> kasya 'make dissolve' (prog.)

The potential prefix /k-/ voices by the rule given in Sect. 3.1.

k + yaka --> gyaka

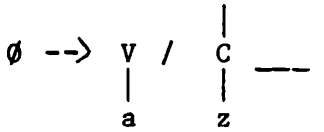
The allomorph of the completive with these roots is accounted for by the Erasure Convention.



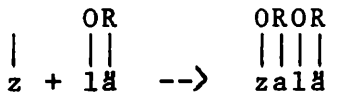
For other consonant-initial roots, we propose two insertion rules to account for the /a/ after /z-/ and the /i/ after the prefixes /r-/, /k-/, and /gb-/.

a-Insertion. An /a/ is inserted after a /z/ which has not been incorporated into the syllable structure.

a-Insertion:



Example:



i-Insertion. An /i/ is inserted after other consonant-final aspectual morphemes. The /i/ is not inserted after the causative prefix /k/. (Thus i-Insertion does not apply to the underlying form /r-u-k-dindë/ 'make fight' (hab.). The /k/ cannot be incorporated and deletes by the Erasure Convention after causing the following consonant to devoice: **rutindë**.) This rule feeds Voicing.

i-Insertion:

$$\emptyset \rightarrow \begin{matrix} V \\ | \\ i \end{matrix} \; / \; \# \; (C) \; \begin{matrix} | \\ C \end{matrix} \; \_\_\_$$

Examples:

```
        OR      ORORR
|       ||      ||||
r + lɨ̈ --> rilɨ̈
```

k + kabɨ̈ --> kikabɨ̈ --> gikabɨ̈

gb + lɨ̈ --> gbilɨ̈ --> bilɨ̈

In Sect. 2 we mentioned a process which optionally deletes word-initial /g/ in unstressed syllables. This process applies commonly to the /g/ of the potential and completive morphemes. Crucially, it applies after i-Insertion. Therefore the potential form **gikabɨ̈** commonly alternates with **ikabɨ̈**.

There is one /y/-initial root which is unlike the /y/-initial roots discussed above in that it behaves in every way as if it began with some other consonant. It therefore also allows /iy/ sequences.

3.3 Two exceptional sets of verbs

Besides the "regular" set of consonant-initial verbs, there are the following two sets which are exceptional with regard to i-Insertion:

Set I:							
ri-na	na	za-na	ka-na	wa-na	ni-na	gu-na	'agree to'
ri-ʒiji	ʃiji	za-ʒiji	ka-ʒiji	wa-ʒiji	ni-ʒiji	gu-ʒiji	'sound'
ri-ʒana	ʃana	za-ʒana	ka-ʒana	wa-ʒana	ni-ʒana	gu-ʒana	'give birth'
ri-dindɛ̈	tindɛ̈	za-dindɛ̈	ka-dindɛ̈	wa-dindɛ̈	ni-dindɛ̈	gu-dindɛ̈	'fight'
ri-giɛ̈e	kiɛ̈e	za-giɛ̈e	ka-giɛ̈e	wa-giɛ̈e	ni-giɛ̈e	gu-diɛ̈e	'put'
ri-guu	ku?	za-guu	ka-guu	wa-guu	ni-guu	gu-luu	'put in'
ri-giru	kiru	za-giru	ka-giru	wa-giru	ni-giru	gu-ʒiru	'pinch'
ri-biji	k-wiji	za-biji	ka-biji	wa-biji	ni-biji	gu-liji	'call'
ri-bi	k-wi	za-bi	ka-bi	wa-bi	ni-bi	gu-ri	'sit'

Set II:

ri-česa	gi-česa	za-česa	ka-česa	wa-česa	ni-česa	gu-česa	'jump'
ri-nă	gi-nă	za-nă	ka-nă	wa-nă	ni-nă	gu-nă	'have sight'
ri-lâa	gi-lâa	za-lâa	ka-lâa	wa-lâa	ni-lâa	gu-lâa	'be broken'

Both of the sets of verbs illustrated above have the allomorph [gu] in the completive instead of the allomorph [b] of the previous set. We do not see presently any way to predict this fact and so we claim that the verbs of Set I and Set II are marked lexically as being exceptional to the i-Insertion rule when the completive prefix is present. We propose the following statement for Set II verbs. (Set I verbs are part of a larger pattern and are discussed below.)

> For Set II verbs: mark the form [-i-Insertion] in the context of COMPLETIVE.

The i-Insertion rule failing, we obtain representations such as the following:

```
        O R
| |   | |
g b + n a
```

Another rule applies which alters the prefixal sequence so that it can be syllabified (and not be lost through the Erasure Convention). The /b/ is changed to /u/.

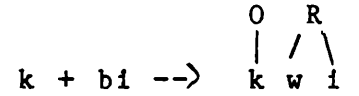
```
Vocalization:    |          |
                 C   -->    V
                 |          |
                 b          u
```

Thus /gb-na/ (COMPL + 'have sight') does not become ***bină***, as it would if it were regular and i-Insertion applied. Nor does it become **nă**, which it would if the Erasure Convention were to apply immediately. But it becomes **gună** by means of Vocalization. This same situation occurs when the completive morpheme occurs before the irregular allomorph /-do/ of the root /-o/ 'eat': /gb-do/ --> **gudo** (see note 4).

Set I verbs are irregular in a more general way. The i-Insertion rule is also not applied following the potential morpheme. Since the potential morpheme and completive morpheme both end in stops underlyingly, we can state the following generalization:

> For Set I verbs, mark the form [-i-Insertion] when the root is immediately preceded by a [-continuant] segment.

Thus the potential form /g+na/ 'agree to' does not become ***gina** by i-Insertion but the /g/ is lost by the Erasure Convention, leaving **na** as the potential form. With /b/ initial stems of this class, Lenition applies after Voicing attempts to apply (and does not because these are obstruent initial roots). The application of Lenition allows the velar stop of the potential morpheme to be incorporated into the syllable and not be lost by the Erasure Convention.



After Lenition applies, Devoicing (see Sect. 2.1) applies, devoicing the initial obstruent of other roots of this class. (In regular verbs, Devoicing is bled by i-Insertion.) The Erasure Convention is responsible for the ultimate loss of the potential /k/ which has not been incorporated.

Examples:

k + giru --> k + kiru --> kiru

k + dindë --> k + tindë --> tindë

Causative verbs which use the /k-/ allomorph of the causative prefix also show the same alternation. (The /u/ prefix in the following example is discussed below.)

r + u + k + dindë --> r + u + k + tindë -->

rutindë 'make fight' (hab.)

As far as the form of /b/ and /g/ initial roots in the completive is concerned, these irregular stem alternations are an old and widely attested feature of Zapotecan languages. Speck 1984 derives the initial /g/ and /b/ by special rules from underlying forms beginning with the consonants which appear in the completive forms. We suggest that similar rules are needed here although we do not formulate them.

The laryngealized vowel of /-guu/ changes to a checked vowel in the potential. Such alternations are attested elsewhere in IZ, but we have nothing to say about them here.

3.4 Verbs with the theme vowel /u/

A large number of basic roots occur lexically with the theme vowel /u/ before them.[7] Some examples are given below. At this time we have no means of predicting the set of roots which occur in this class. The majority of derived causative verbs also occur with this theme vowel, which we suggest is therefore inserted as part of the regular causative formation rule.

r-u-kaabɨ	g-u-kaabɨ	z-u-kaabɨ	k-u-kaabɨ	wa-kaabɨ	n-u-kaabɨ	b-i-kaabɨ	'commission'
r-u-dii	g-u-dii	z-u-dii	k-u-dii	wa-dii	n-u-dii	b-i-dii	'give'
r-u-yƗa	g-u-yƗa	z-u-yƗa	k-u-yƗa	wa-yƗa	n-u-yƗa	b-i-yƗa	'dance'
r-u-zelɛ	g-u-zelɛ	z-u-zelɛ	k-u-zelɛ	wa-zelɛ	n-u-zelɛ	b-i-zelɛ	'belch'

Causatives:

r-u-k-wezƗ	g-u-k-wezƗ	z-u-k-wezƗ	k-u-k-wezƗ	wa-k-wezƗ	n-u-k-wezƗ	b-i-k-wezƗ	'make wait'
r-u-si-dubi	g-u-si-dubi	z-u-si-dubi	k-u-si-dubi	wa-si-dubi	n-u-si-dubi	b-i-si-dubi	'make worn out'

We propose that verbs such as /-u-dii/ occur in the lexicon with the /u/ as a prefix rather than as part of the root partly because of the parallelism with the /u/ which occurs in obviously derived verbs (the causatives) in which the /u/ is not part of the root, and also so that we may maintain the generalization regarding stress assignment. Stress is assigned to the first vowel of the root. If the /u/ of these verbs were to be considered as a root-initial vowel, this generalization would have a large number of exceptions instead of the two or three which now exist. Finally, the /u/ is clearly a separable morpheme since in the causative forms of such verbs the /u/ does not occur before the root: **r-u-zunisa** 'sweat', **r-u-sunisa** 'make sweat'.

This /u/ changes to /i/ by the same dissimilation rule which affects root-initial /u/.

Example: gb + u + kaabɨ --> gbikaabɨ --> bikaabɨ

This pretonic vowel /u/ creates problems for the three aspect prefixes which have vowels since they cannot be syllabified straightforwardly. Recall that branching rhymes are generally allowed only in stressed syllables and that every syllable generally must have an onset.

```
OR       OR       OR       OR       OR       OR
||   |   ||       ||   |   ||       ||   |   ||
ka + u + dii      wa + u + dii      ni + u + dii
```

We first discuss the unreal prefix /ni-/. Gliding

applies and the following intermediate structure is obtained:

```
O R
|/ \
ny u dii
```

But branching rhymes are generally not allowed in unstressed syllables in IZ. The /y/ of the unreal prefix simply deletes.

```
y-Deletion:     R  -->  R
               / \      |  where R occurs in an
               y V      V  unstressed syllable
```

Thus underlying /ni-u-dii/ becomes **nudii**.

It is not clear at this point what processes are involved in the derivation of the other forms with vowel-final prefixes. For some reason, y-Insertion does not apply.

ka + u + ==> ku

wa + u + ==> wa

It should be noted that if the /a/ were to delete after /w/, as it does after /k/, the non-permitted sequence /wu/ would be generated.

3.5 The verb 'be sour'

The following verb appears to be exceptional in several ways.[8] Word stress is pronounced on the checked vowel.

ri-ɪʔ	gi-ɪʔ	za-ɪʔ	ka-ɪʔ	wa-ɪʔ	ni-ɪʔ	bi-ɪʔ	'be sour'

The allomorphy which occurs with the verb 'be sour' is exactly that which occurs with regular consonant-initial roots, although it does not begin with a consonant. The epenthetic vowels /i/ and /a/ occur after the appropriate prefixes. There is no gliding of the /i/ of /ni-/. There is no epenthetic /y/ after /ka-/ and /wa-/. These forms also appear to be exceptional in that they have syllables without onsets. If this were an /i/-initial root, it would be the only one attested in the language. Finally, the causative form is (cited in the habitual aspect) **rusiɪʔ**. The allomorph /si-/ of the causative commonly occurs with consonant-initial roots.

We propose an analysis here in which these exceptional characteristics are accounted for by one device: the verb 'be sour' has an empty root-initial consonant position. (A similar analysis has been proposed for larger classes of verbs in other languages, such as Seri (Marlett and Stemberger 1983).) The proposed lexical form of this verb is as follows:

```
C V     'be sour'
  |
  ʔ
```

The following derivations show how this representation accounts for the surface forms.

```
C   CV          CV CV
|    |          ||  |
r + iʔ    -->   ri  iʔ

CC  CV          CCV CV          CV CV
||   |          |||  |          ||  |
gb + iʔ   -->   gbi  iʔ  -->    bi  iʔ

C    CV         CV  CV
|     |         ||   |
z  +  iʔ  -->   za   iʔ

CV   CV
||    |
ka    iʔ
```

Such an example provides additional evidence for the claim that the CV skeleton and the phonemes of a morpheme need to be represented on two separate tiers.

4 Conclusion

In this brief work we have shown that a number of phonological processes in IZ interact with the extremely restricted syllable structure that this language has (compared, for example, with TZ). Furthermore, we have motivated underlying forms for even prefixes such as the completive morpheme. (This is interesting to the first author personally since the first course he took in generative phonology used the IZ /gu-/ ~ /bi-/ alternation as an example of clear suppletive allomorphy.) However, not all exceptional classes have been eliminated, and the presence of a large class of verbs taking the theme vowel /u/ is unexplained. Some, but not all, Zapotec languages have a class of verbs with the theme vowel. TZ does not.

We hope that further investigation of other Zapotec languages may shed light on this curious fact.

Notes

*We thank our colleague María Villalobos for confirming the Zapotec data which were not drawn from previous publications. The contribution made by the first author was facilitated by a research position at the Universidad Nacional Autónoma de México this past year.

1. We represent words below in their utterance-medial form. Laryngeal modification of unstressed vowels occurs only prepausally and is predictable from other information. Pickett (et al.) 1965 gives the prepause form. In this regard, see also Mock 1982. Stress generally occurs on the first vowel of the root. Exceptions (nouns, primarily) are indicated in our transcriptions by means of an apostrophe preceding the stressed syllable. We indicate the superficially contrasting tones in this article in the following way: high tone [á], low rising tone [ǎ], and low tone (unmarked).

2. When this possessive prefix is added before a root beginning with a strident segment, the following changes occur: **s** + **s**, **z**, **c**, **j** --> **s**, **š** + z --> s. (No examples of **š** + s have been found.) These changes can be stated formally as follows:

[+strid]	[+strid] [∝high]		[∝high]
1	2	==> 1	∅

3. Phonetically a rhyme such as /o?w/ is pronounced as [ow?].

4. If /ny/ were analyzed as a simple palatal consonant, this problem would disappear. The reason such a move is questionable is that Cy clusters are common and /ny/ fits into this pattern straightforwardly.

5. A few verbs have a different stem when the subject is first person plural (exclusive or inclusive). For example, the verb 'sleep' is /-dusi/ with such a subject, but it is /-asi/ generally (and for some speakers even with a first person plural subject). A couple of verbs have different stems when the subject is first person singular. The verb 'eat' is /-do?/ when the subject is first person plural (in all aspects), /-dawa?/ when the subject is first person singular in the completive aspect, /-awa?/ when first person singular in other aspects, /-do/ for other subjects in the completive aspect, and /-o/ elsewhere. (We discuss the special completive aspect stems below.) The two /e/-initial

verbs listed here both have other stems: 'drink' is /-de?/ with first person plural subject, and /-e?/ otherwise; 'come' is /-yupa/ with first person plural subject, /-enda/ with first person singular subject, and /-eeda/ otherwise.

6. Previous analyses of IZ have claimed implicitly that there are no passive forms, although (usually heavily restricted) passives have been described in other Zapotec languages (Speck 1984). We suggest here that there are at least several passive forms in IZ. The following examples, which were previously analyzed as simple/causative verb pairs, illustrate the morphology involved with passives:

	Active	Passive
'grind'	r-uutu	r-y-uutu
'grab'	r-aʉ̈a	r-y-aaʉ̈a
'rub'	ri-gaabi	ri-daabi
'slice'	ri-guza	ri-luuzʉ̈
'shake'	ri-gibi	ri-biibi

The consonant-initial roots above are all verbs which have a special stem in the completive of the active (see Sect. 3.3); this completive stem generally begins with the same consonant as that which appears in the passive stem.

7. The idea of a theme vowel is suggested in unpublished work by W. Kreikebaum and D. Tuggy (Kreikebaum 1983).

8. Another verb which is irregular lexically in that it has a vowel cluster underlying is /-ui? diiɲa/ 'chat'. This verb conjugates in every way like a /u/-initial verb although the /u/ is not syllabic: [rwi?] (hab.). Stress falls on the /i/. The completive stem is /-yui?/. We list the surface forms of this verb below.

rwi? gwi? zwi? kaywi? waywi? aywi? bywi?

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